COMP8290

Multimedia Networks and Real Time Protocols

Session 1, In person-scheduled-weekday, North Ryde 2024

School of Computing

Contents

General Information

Unit convenor and teaching staff
Convener, Teaching Staff
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Credit points
10

Prerequisites
COMP6010 and COMP6250

Corequisites

Co-badged status

Unit description
This course focuses on recent advances in multimedia networking technologies and protocols. The multimedia transportation requires the network to support timely and errorless transmission much more strictly than other data. This had led to the development of state of the art technologies, protocols and mechanisms to support multimedia traffic over the network. Major topics include multimedia compression and standards, quality of service (QoS) support mechanisms and protocols, performance analysis, queuing principles, IP multicasting, Internet multimedia applications, and multimedia transport over wireless networks.

Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at https://www.mq.edu.au/study/calendar-of-dates

Learning Outcomes

On successful completion of this unit, you will be able to:

ULO1: Analyse and design various types of network architectures, protocols, and

mechanisms to support multimedia.

ULO2: Characterise and classify different classes of network traffic in order to assess its impact on the network.

ULO3: Describe and design end systems support for multimedia transport.

ULO4: Use simulation tools to analyse and evaluate the performance of multimedia networked systems.

ULO5: Describe, analyse and critically evaluate different IP multicasting techniques.

ULO6: Engage in independent professional work with a high level of autonomy and accountability.

General Assessment Information

Requirements to Pass this Unit

To pass this unit you must:

- Achieve a total mark equal to or greater than 50%

Hurdle Assessments

There is no hurdle assessment. But students need to obtain 50% overall marks to pass the unit.

Late Assessment Submission Penalty

Unless a Special Consideration request has been submitted and approved, a 5% penalty (of the total possible mark of the task) will be applied for each day a written report or presentation assessment is not submitted, up until the 7th day (including weekends). After the 7th day, a grade of '0' will be awarded even if the assessment is submitted. The submission time for all uploaded assessments is **11:55 pm**. A 1-hour grace period will be provided to students who experience a technical concern.

For any late submission of time-sensitive tasks, such as scheduled tests/exams, performance assessments/presentations, and/or scheduled practical assessments/labs, please apply for Special Consideration.

Special Consideration

The Special Consideration Policy aims to support students who have been impacted by short-term circumstances or events that are serious, unavoidable and significantly disruptive, and which may affect their performance in assessment. If you experience circumstances or events

that affect your ability to complete the assessments in this unit on time, please inform the convenor and submit a Special Consideration request through ask.mq.edu.au.

Assessment Tasks

Name	Weighting	Hurdle	Due
Assignment 1	10%	No	Week 6
Assignment 2	30%	No	Week 12
Quiz 1	10%	No	Week 5
Final Examination	40%	No	Exam Week
Quiz 2	10%	No	Week 10

Assignment 1

Assessment Type [1]: Problem set
Indicative Time on Task [2]: 15 hours
Due: **Week 6**
Weighting: **10%**

The purpose of this problem solving assignment is to help the students to get accustomed to dealing with real world problem situations/issues.It is designed to help students analyse a particular problem and find its best solution. Some questions may require an in depth research and will be a process to come up with an acceptable and reasonable answer

On successful completion you will be able to:

- Analyse and design various types of network architectures, protocols, and mechanisms to support multimedia.
- Characterise and classify different classes of network traffic in order to assess its impact on the network.
- Describe and design end systems support for multimedia transport.
- Use simulation tools to analyse and evaluate the performance of multimedia networked systems.

Assignment 2

Assessment Type [1]: Project
Indicative Time on Task [2]: 20 hours

Due: **Week 12**
Weighting: **30%**

Report Writing and Presentation: Students will leverage their knowledge of multimedia systems and real time protocols to research and critically analyse relevant literature in the discipline and present conclusions. The assessment also allows students to further develop their team working and professional communication skills.

On successful completion you will be able to:

- Describe and design end systems support for multimedia transport.
- Describe, analyse and critically evaluate different IP multicasting techniques.
- Engage in independent professional work with a high level of autonomy and accountability.

Quiz 1

Assessment Type [1]: Quiz/Test
Indicative Time on Task [2]: 5 hours
Due: **Week 5**
Weighting: **10%**

A quiz is a short test that will be based on your previously covered lecture material. For example, week 5 quiz will be based on lectures done in weeks 1-4. The quiz questions will be handed over to you at the beginning of your Lecture class. Each quiz contributes 10% of the total mark and serves as a feedback mechanism to monitor your progress in the unit.

On successful completion you will be able to:

- Analyse and design various types of network architectures, protocols, and mechanisms to support multimedia.
- Characterise and classify different classes of network traffic in order to assess its impact on the network.
- Describe and design end systems support for multimedia transport.

Final Examination

Assessment Type [1]: Examination
Indicative Time on Task [2]: 30 hours
Due: **Exam Week**

Weighting: **40%**

Final examination

On successful completion you will be able to:

- Analyse and design various types of network architectures, protocols, and mechanisms to support multimedia.
- Characterise and classify different classes of network traffic in order to assess its impact on the network.
- Describe and design end systems support for multimedia transport.
- Use simulation tools to analyse and evaluate the performance of multimedia networked systems.
- Describe, analyse and critically evaluate different IP multicasting techniques.
- Engage in independent professional work with a high level of autonomy and accountability.

Quiz 2

Assessment Type [1]: Quiz/Test
Indicative Time on Task [2]: 5 hours
Due: **Week 10**
Weighting: **10%**

A quiz is a short test that will be based on your previously covered lecture material. For example, week 5 quiz will be based on lectures done in weeks 1-4. The quiz serves as a feedback mechanism to monitor your progress in the unit.

On successful completion you will be able to:

- Describe and design end systems support for multimedia transport.
- Describe, analyse and critically evaluate different IP multicasting techniques.

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[1] If you need help with your assignment, please contact:

- the academic teaching staff in your unit for guidance in understanding or completing this type of assessment

- the Writing Centre for academic skills support.

[2] Indicative time-on-task is an estimate of the time required for completion of the assessment task and is subject to individual variation

Delivery and Resources

COMP8290 is taught via lectures and informal tutorial/practical sessions.

Lectures

Lectures are used to introduce switch/router design and cloud architectures and protocols and put them in a wider context. You are encouraged to ask questions of the lecturer, both during and outside the lecture, to clarify anything you might not be sure of. Lecture notes will be made available each week but these notes are intended as an outline of the lecture only and are not a substitute for your own notes or the recommended reading list.

It should be noted that no single text book completely covers the content of this unit. A large portion of the lecture material is drawn from research papers, white papers and standard documents . Students are encouraged to read the weekly recommended reading list to gain a solid understanding of the topics that are covered.

Quizzes

There will be two quizzes in the following weeks: **5** and **10**. These quizzes will be held in the practical class. A quiz is a short test that will be based on your previously covered lecture material. For example, week 5 quiz will be based on lectures done in weeks 1-4. The quiz questions will be handed over to you at the beginning of your Lecture class. These quizzes contribute 20% of the total mark and serve as a feedback mechanism to monitor your progress in the unit.

Assignments

Assignemnts 1 and 2 are subjec to Late Assessment Submission Penalty

Unless a Special Consideration request has been submitted and approved, a 5% penalty (of the total possible mark of the task) will be applied for each day a written report or presentation assessment is not submitted, up until the 7th day (including weekends). After the 7th day, a grade of ‘0’ will be awarded even if the assessment is submitted. The submission time for all uploaded assessments is **11:55 pm**. A 1-hour grace period will be provided to students who experience a technical concern.

For any late submission of time-sensitive tasks, such as scheduled tests/exams, performance assessments/presentations, and/or scheduled practical assessments/labs, please apply for Special Consideration.

Tutorial

Problem solving session: Tutorials are posted every Friday on ilearn. Even though these tutorial exercises are not formally assessed, it is important that students solve them on a weekly basis as these questions are often previous exam questions or structured like test/exam questions. The more practice you have at such questions, the more likely you are to do yourself justice in

quizzes/exams. Solutions to these exercises will be regularly posted on ilearn unit site. If need be, this will also allow you to discuss the problems effectively with your lecturer/peers and maximise the feedback you get on your work. In case of any difficulty, seek help from the teaching staff.

Practical

The purpose of practical sessions is to reinforce the concepts that were taught in the lectures.

Note: Practical classes are not held every week. Please refer to the ilearn unit web page for updates.

TEXT

There is no single text book containing material that could address all topics of unit. All necessary reading material and elaborate and detailed notes on lecture topics will be provided by the lecturer every week.

Other Useful Books (You need not buy unless you believe you need to own one)

- Jenq-Neng Hwang Multimedia Networking: From Theory to Practice Cambridge University Press 978-0-521-88204-0
- RTP - Audio and Video for the Internet Addison-Wesley, 2003 ISBN-10: 0672322498 ISBN-13: 978 0672322495 First Edition

Methods of Communication

Our primary means of communication will be through your university email and announcements on iLearn. It is crucial to consistently check your university email for important updates and information related to the course. Additionally, significant announcements will be posted on iLearn, a centralized platform for accessing vital details about the course. Should you have any queries or require assistance from the teaching staff, including the unit convenor, you have two communication channels. Firstly, you can post your queries on the iLearn discussion board, providing an interactive space for instructors and peers to engage in discussions. Alternatively, you may send emails to the corresponding addresses of the teaching staff using your university email address for official communication. Through these communication methods, we aim to ensure effective and timely dissemination of information and provide the necessary support throughout the course.

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central (https://policies.mq.edu.au). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- Academic Appeals Policy

- Academic Integrity Policy
- Academic Progression Policy
- Assessment Policy
- Fitness to Practice Procedure
- Assessment Procedure
- Complaints Resolution Procedure for Students and Members of the Public
- Special Consideration Policy

Students seeking more policy resources can visit Student Policies (https://students.mq.edu.au/support/study/policies). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

To find other policies relating to Teaching and Learning, visit Policy Central (https://policies.mq.edu.au) and use the search tool.

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: https://students.mq.edu.au/admin/other-resources/student-conduct

Results

Results published on platform other than eStudent, (eg. iLearn, Coursera etc.) or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in eStudent. For more information visit ask.mq.edu.au or if you are a Global MBA student contact globalmba.support@mq.edu.au

Academic Integrity

At Macquarie, we believe academic integrity – honesty, respect, trust, responsibility, fairness and courage – is at the core of learning, teaching and research. We recognise that meeting the expectations required to complete your assessments can be challenging. So, we offer you a range of resources and services to help you reach your potential, including free online writing and maths support, academic skills development and wellbeing consultations.

Student Support

Macquarie University provides a range of support services for students. For details, visit http://students.mq.edu.au/support/

The Writing Centre

The Writing Centre provides resources to develop your English language proficiency, academic writing, and communication skills.

- Workshops
- Chat with a WriteWISE peer writing leader
- Access StudyWISE

- Upload an assignment to Studiosity
- Complete the Academic Integrity Module

The Library provides online and face to face support to help you find and use relevant information resources.

- Subject and Research Guides
- Ask a Librarian

Student Services and Support

Macquarie University offers a range of Student Support Services including:

- IT Support
- Accessibility and disability support with study
- Mental health support
- Safety support to respond to bullying, harassment, sexual harassment and sexual assault
- Social support including information about finances, tenancy and legal issues
- Student Advocacy provides independent advice on MQ policies, procedures, and processes

Student Enquiries

Got a question? Ask us via AskMQ, or contact Service Connect.

IT Help

For help with University computer systems and technology, visit http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/.

When using the University's IT, you must adhere to the Acceptable Use of IT Resources Policy. The policy applies to all who connect to the MQ network including students.

Unit information based on version 2024.03 of the Handbook